al. (U.S. Patent No. 5,558,091); and Claims 4-6, 11, and 12 stand objected to as being dependent upon a rejected base claims, but would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claim; and Claims 28 and 29 stand allowed.

The following remarks are believed to be fully responsive to the outstanding Office Action and are believed to place the application in condition for allowance. In view of the following remarks, the rejections are traversed and reconsideration of this application is respectfully requested.

PETITION TO CORRECT INVENTORSHIP

The Petition to Correct Inventorship is noted as being defective because of various informalities. By this response, a #1). Statement in Accordance with 37 CFR 1.32(b)(1) from Mr. Haas stating that the inventorship error occurred without any deceptive intent on his part, #2). Statement from Mr. Martinelli agreeing to the change in accordance with 37 CFR 1.34(b)(2), and #3). Statement signed by the Assignee agreeing to the change in accordance with 37 CFR 1.324(b)(3) are being submitted herewith to obviate the noted defects. These documents are copies of the original documents filed in connection with U.S. Patent No. 5,592,939. The present application is a reissue application for this '939 Patent.

DOUBLE PATENTING

Claims 1-22 stand provisionally rejected under 35 U.S.C. §101 as claiming the same invention as that of Claims 1-22 of co-pending application 09/494,213. Applicants

respectfully traverse this rejection. In this regard, Claims 1-22 of co-pending application have since been amended so that they are no longer co-extensive in scope with claims of the pending application. Accordingly, withdrawal of this rejection is respectfully requested.

REJECTION UNDER 35 U.S.C. § 102

Claims 1-3, 7-10, and 13-22 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Acker, et al. (U.S. Pat. No. 5,558,091). Applicant respectfully traverses this rejection.

In this regard, independent Claim 1 is directed to a method of determining the location of a sensing coil within a navigational domain. The method includes inducing within the sensing coil a set of orientation signal values representative of an orientation of the sensing coil and independent of a position of the sensing coil, determining the orientation of the sensing coil using the induced orientation signal values, inducing within the sensing coil a set of positional signal values representative of the position of the sensing coil, and determining the position of the sensing coil using the positional signal values and the determined orientation.

Independent Claim 8 is directed to a system for determining a location of a sensing coil within a navigational domain that includes a first signal inducing means for inducing within the sensing coil orientation signals representative of the orientation of the sensing coil, analysis means coupled to the first signal inducing means for determining the orientation of the sensing coil using the induced orientation signals and independent of the position of the sensing coil, a second signal inducing means for

inducing within the sensing coil position signals that are representative of the position of the sensing coil, and analysis means coupled to the second signal inducing means for determining the position of the sensing coil using the determined orientation and the induced position signals.

In contrast, the position of the probe 50 in Acker, et al. is "determined from the homogeneous field local components measured during application of the homogeneous fields and from the gradient field local components measured during application of the first and second gradient fields (see column 5, lines 45-52). Acker, et al. specifically identifies this process of determining the position at column 16, lines 34-67. This process uses the normalized homogeneous field values H'_{11} . . . H'_{33} in conjunction with gradient field component values $R_{X',X}$ . . . $R_{Z'Z}$, ... In other words, Acker, et al. does not determine the position of the probe by using positional signal values and a determined orientation, but simply utilizes normalized homogeneous field values H and gradient field values R to determine the position of the probe. Thus, a calculated orientation is not used in combination with positional signal values to determine the position of the sensing coil, as set out in Applicant's independent Claims 1 and 8. Should the Examiner disagree, it is respectfully requested that the Examiner specifically point out where this teaching is set out in Acker, et al. Accordingly, Applicants respectfully submit that independent Claims 1 and 8, along with their corresponding dependent claims are patentable over Acker, et al.

Independent Claim 7 is directed to a system for determining the location of a sensing coil within a navigational domain that includes a first transmit means for projecting into the navigational domain magnetic energy sufficient to induce signal

values within the sensing coil representative of an orientation of the sensing coil and independent of the position of the sensing coil, second transmit means for projecting into the navigational domain magnetic energy that is sufficient to induce signal values within the sensing coil representative of the position of the sensing coil, and analysis means coupled to the first transmit means and the second transmit means for determining the position and orientation of the sensing coil from the induced signal values.

In contrast, Acker, et al. does not include a first transmit means that projects into the navigational domain energy sufficient to induce signal values representative of an orientation of the sensing coil and second transmit means for projecting into the navigational domain magnetic energy that is sufficient to induce signal values representative of the position of the sensing coil. Acker, et al. discloses three pairs of Helmholtz coils 34, 36 and 38 (see Figure 1). This Helmholtz coil set is used to generate both the homegeneous unidirectional magnetic field used for orientation and a gradient field for position (see column 12, lines 5-38). In other words, Acker, et al. teaches a single transmit source for generating both homogeneous fields and gradient fields and, as such, does not teach or suggest first transmit means and second transmit means, as set out in Applicant's independent Claim 7. Accordingly, Applicant respectfully submits that independent Claim 7 is also patentable over Acker, et al.

Independent Claims 15 and 19 are directed to a method and system, respectively, for determining a location of a sensing coil within a navigational domain. These claims include defining a location of the sensing coil with a set of independent location parameters and sequentially generating within the navigational domain a

sequence of magnetic fields for inducing within the sensing coil a corresponding sequence of induced signals with each defined by an induced signal expression that functionally relates the induced signal to certain ones of the location parameters, such that a set of location parameters is determinable by sequentially solving individual signal expression groups, each including certain ones of the induced signal expressions and sufficient to represent a subset of the location parameters.

However, upon review of Acker, et al., the teachings set out in independent Claims 15 and 19 cannot be identified in Acker, et al. Moreover, it is noted that the Examiner has not specifically set out where this teaching is identified in Acker, et al. In other words, Acker, et al. does not teach or suggest defining a location of the sensing coil with a set of independent location parameters and sequentially generating within the navigational domain a sequence of magnetic fields for inducing within the sensing coil a corresponding sequence of induced signals that are each defined by induced signal expressions that function or relate the induced signals to certain ones of the location parameter, such that the set of location parameters is determinable by sequentially solving individual signal expression groups, each including certain ones of the induced signal expressions and sufficient to represent a subset of the location parameters, as set out in Applicant's independent Claims 15 and 19. Accordingly, Applicant respectfully submits that independent Claims 15 and 19 and their corresponding dependent claims are also patentable over Acker, et al. Again, should the Examiner disagree, it is respectfully requested that the Examiner specifically point out where these teaching are set out in Acker, et al.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (617) 535-4065.

Respectfully submitted,

Dated: 5.21.03

By: _____

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CERTIFICATE OF MAILING UNDER 37 U.S.C. § 1.8

I hereby certify that this correspondence is being deposited with the United States Post Office as First Class Mail on the date indicated below in an envelope addressed to: Mail Stop Fee Amendment, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450.

May 21, 2003
Date

Cynthia Joseph